UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,546	10/29/2002	Steven Neiman	36287-03400	7678

27171   7590   11/20/2008
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EXAMINER
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ART UNIT	PAPER NUMBER
2195	

MAIL DATE	DELIVERY MODE
11/20/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)	
	10/065,546	NEIMAN ET AL.	
Office Action Summary	Examiner	Art Unit	
	ERIC C. WAI	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>04 August 2008</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>2-22,26-43,46-56,60-62 and 64-79</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>2-22, 26-43, 46-56, 60-62, and 64-79</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____.

       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 2-22, 26-43, 46-56, 60-62, and 64-79 are presented for examination.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.   Claims 2-22, 26-43, and 78 are rejected under 35 U.S.C. 101 because the

claimed invention is directed to non-statutory subject matter.

4.   Claims 2-22, 26-43, and 78 are directed to a process, however, the process does

not include a physical structure and is not tied to another statutory class, and as such

the claims are not directed to statutory subject matter. In contrast, a "computer

implemented method" is a process claim with defined structural and functional

interrelationships and tied to a machine statutory class and therefore directed to

statutory subject matter.

5.   Appropriate correction or amendment is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7.   Claims 2-22, 26-43, 46-56, 60-62, and 64-79 are rejected under 35 U.S.C. 112,

second paragraph, as being indefinite for failing to particularly point out and distinctly

claim the subject matter which applicant regards as the invention.

      a.   The following terms lack antecedent basis in the claims:

            i.   Claim 39, line 6, "said first and second types of processing

            devices".

      b.   The following terms are not clearly understood:

            ii.   Claim 39 lines 5-7 recite, "each of said one or more reservations

            expresses an amount of said first and second types of processing device

            in a normalized unit of processing capability". It is unclear what is meant

            by "expresses an amount" (i.e. an amount of processing capability to be

            reserved? an amount that the processing device is capable of

            processing?).

            iii.   Claim 74 is rejected for the same reasons as above.

            iv.   Claim 39, lines 8 and 9 recite, "a first type .. a second type of

            processing device". It is unclear if these elements are the same as the

            processing device of line 6.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

    (a) A patent may not be obtained though the invention is not identically disclosed or described as set
    forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 2-3, 22, 26-28, 35-36, 38-43, 46-47, 55-56, 60-62, 70-71, and 73-79 are

rejected under 35 U.S.C. 103(a) as being unpatentable over Rajkumar (US PG Pub No.

US 2003/0061260 A1) in view of Buyya et al. ("A Case for Economy Grid Architecture

for Service Oriented Grid Computing", Parallel and Distributed Processing Symposium.,

Proceedings 15th International 23-27, April 2001, pgs 776-790,), in view of Ahamed et

al. (US Pat No. 5,978,831), further in view of Tayyar et al. (US Pat No. 7,194,741).

10.   Regarding claim 39, Rajkumar discloses a method, comprising:

        receiving one or more reservations for use of at least a first subset of a plurality

of computing resources of a distributed computing system, wherein each of said one or

more reservations specifies a period of time for use of said computing resources

(abstract lines 4-5 and 8-9);

        allocating said first subset of said computing resources for use in accordance

with said one or more reservations (abstract lines 14-17, wherein the "reservation

activities" run at a higher priority);

        receiving one or more requests for use of at least a second subset of said

plurality of computing resources of said distributed computing system, wherein each of

said one or more requests specifies a period of time for use of said computing

resources (abstract lines 9-12 and [0025]);

        determining whether a sufficient amount of one or more unallocated computing

resources are available, wherein said one or more unallocated computing resources

comprises said computing resources of said distributed computing system that are not

allocated in accordance with said one or more reservations ([0023] lines 8-9);

responsive to said sufficient amount of said unallocated computing resources

being available, allocating said unallocated computing resources in accordance with

said one or more requests ([0023] lines 8-9); and

responsive to said sufficient amount of said unallocated computing resources not

being available, allocating said unallocated computing resources in accordance with an

allocation criteria ([0024] lines 1-7).

11.   While, Rajkumar does not explicitly teach the step of determining whether a

sufficient amount of unallocated computing resources are available to fulfill all of said

one or more requests, it would have been obvious to one of ordinary skill in the art at

the time of the invention to have included this limitation. Rajkumar's method has the

same end result of allocating resources to satisfy the requesting tasks as much as

possible. Furthermore, Rajkumar does not explicitly teach that the method is to be used

on a distributed computer system. It would have been obvious to one of ordinary skill in

the art at the time of the invention to include a distributed computer in Rajkumar's

invention. One would be motivated by the desire to increase the throughput and

scalability of Rajkumar's invention.

12.   Rajkumar does not teach that each reservation and request has a corresponding monetary cost to a user, and charging the user the monetary cost for use of the computing resources.

13.   Buyya teaches a computational economy for use in a grid computing system that allows produces and consumers to negotiate costs for resources (abstract, and pg 1 column 2 paragraph 2). Buyya teaches multiple models where resource providers set a price through a posted price or bargaining model that is dynamic or static in nature (pg 3 column 2 paragraph 3). Buyya teaches that such an economy results in resource providers obtaining the best possible return on their investment by maximizing their resource utilization and profit (pg 2 column 2 paragraph 2).

14.   It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Rajkumar to include Buyya's teachings in order to implement a computational economy. One would be motivated by the desire to increase revenue as a result of competition as described by Buyya.

15.   Rajkumar also does not teach that said plurality of computing resources comprises: a first type of processing device having a first processing capability; and a second type of processing device having a second processing capability, wherein said first and second processing capabilities are different.

16.   Ahamed teaches mixing and matching processors of different speeds in order to create a system with reduced cost (col 3 lines 3-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to have included a distributed

computer system composed of processors of differing processing capabilities in order to reduce system costs.

17.   Rajkumar also does not teach that each of said one or more reservations expresses an amount of said first and second types of processing device in a normalized unit of processing capability.

18.   It is old and well known to normalize values to simply values such as indicated Tayyar (col 3 lines 37-38, 52-56). Since the combination of Rajkumar and Ahamed results in a system having different processor sets with different capabilities, it would have been obvious to one of ordinary skill in the art to normalize the reservation values to simply the combination of Rajkumar and Ahamed.

19.   Regarding claim 2, Rajkumar teaches modifying an amount of said plurality of computing resources of said distributed computing system based on consideration of said one or more reservations ([0024] lines 3-7).

20.   Regarding claim 3, Rajkumar and Buyya do not explicitly teach adding a computing resource while said distributed computing system is in use.

21.   It would have been obvious to one of ordinary skill in the art at the time of the invention to include adding a computing resource while the system is in use. One would

be motivated by the desire to ensure that additional resources can still be allocated
even if all the currently available resources are saturated.

22.   Regarding claim 22, Rajkumar teaches that said plurality of computing resources
comprises a processing device ([0048] line 2).

23.   Regarding claim 26, Rajkumar and Buyya do not teach charging a user for
canceling a reservation.

24.   However it would be obvious to one of ordinary skill in the art at the time of the
invention to include charging a user for the cancellation. Official notice is made that it is
well known to charge a user for canceling a reservation. One would be motivated by the
desire to penalize users for the cancellation of a resource because of the possibility that
the resource would remain unutilized and no income was being generated from the idle
resource.

25.   Regarding claim 27, Rajkumar teaches that said plurality of computing resources
comprises a memory device ([0048] line 5).

26.   Regarding claim 28, Rajkumar teaches that said plurality of computing resources
further comprises a processing device ([0048] line 2).

27.   Regarding claim 35, Rajkumar teaches that one or more requests each comprise

a priority indication, and wherein said allocation criteria considers said priority indication

of each said request (abstract lines 9-12).

28.   Regarding claim 36, Rajkumar teach that said allocation criteria comprises a

calculation of a weighted average based at least in part on said priority indications

([0020] lines 16-18).

29.   Regarding claim 38, Rajkumar teaches that the allocation criteria comprises an

equal division of said unallocated computing resources between a plurality of users that

have made a request ([0023-0024], wherein fixed priority activities having the same

priority would be given an equal division of the resources).

30.   Regarding claims 40, Rajkumar and Buyya do not explicitly teach that said

allocation criteria comprises fulfilling said requests beginning with said request

comprising a highest bid indication and continuing in descending order of requests

comprising said bid indications of lesser values until all of said unallocated resources

have been allocated.

31.   However, it would have been obvious to one of ordinary skill in the art at the time

of the invention to perform the fulfilling of requests in this manner. A skilled artisan

would have known to place greater priority on higher bids by granting the associated

requests first and continuing in a descending order of requests comprising bid

indications of lesser values. One would be motivated by the desire to turn a higher profit by accepting the highest bids first.

32.   Regarding claims 41, Rajkumar teaches that the unallocated computing resources are allocated dynamically ([0051] lines 2-3).

33.   Regarding claim 42, Rajkumar and Buyya do not explicitly teach re-allocating said unallocated computing resources dynamically.

34.   However it would have been obvious to one of ordinary skill in the art at the time of the invention to include reallocation. While not mentioned explicitly by Rajkumar, such a process is implied since Rajkumar's system is intended to continuously allocate resources as they are freed and new tasks come in.

35.   Regarding claim 43, Rajkumar teaches that the unallocated computing resources are allocated in real time in response to receiving said one or more requests (claim 2).

36.   Regarding claim 46, Rajkumar teaches that said computing device comprises a server ([0048]).

37.   Regarding claim 47, Rajkumar and Buyya do not teach that said computing device comprises at least two servers, wherein each server is in a different geographic location.

38.   However, it would have been obvious to one of ordinary skill in the art at the time

of the invention to include two servers in separate geographic locations. One would be

motivated by the desire to protect against system failure by using load balancing and

redundancy.

39.   Regarding claim 55, Rajkumar teaches that a persistent data storage queue in

communication with said computing resources, and wherein a minimum availability of

said distributed computing system is defined by an availability of said persistent data

storage queue ([0007]).

40.   Regarding claim 78, Buyya teaches wherein one or more requests each

comprise a monetary bid indication, and wherein said allocation criteria considers said

monetary bid indication of each said request (pg 3 column 2 paragraphs 2 and 4, "bid-

based proportional resource sharing model").

41.   Regarding claims 56, 60-62, 70-71, 73-77, and 79, they are the system claims of

claims 22, 26-28, 35-36, 38, 41, 43, and 78 above. Therefore, they are rejected for the

same reasons as claims 22, 26-28, 35-36, 38, 41, 43, and 78.

42.   Claims 4-21, 29-34, 37, 48-54, 64-69, and 72 are rejected under 35 U.S.C.

103(a) as being unpatentable over Rajkumar (US PG Pub No. US 2003/0061260 A1),

Buyya et al. ("A Case for Economy Grid Architecture for Service Oriented Grid

Computing", Parallel and Distributed Processing Symposium., Proceedings 15th

International 23-27, April 2001, pgs 776-790), Ahamed et al. (US Pat No. 5,978,831),

and Tayyar et al. (US Pat No. 7,194,741), further in view of Schweitzer et al. (US Pat

No. 6,418,467 hereinafter Schweitzer).

43.   Schweitzer was disclosed on IDS dated 1/12/2004.

44.   Regarding claim 4, Rajkumar, Buyya, Ahamed, and Tayyar do not teach

monitoring a usage level for at least a portion of said computing resources of said

distributed computing system.

45.   Schweitzer describes a method for network accounting and billing based on

usage data (abstract and col 1 lines 56-67 to col 2 lines 1-7). It would have been

obvious to one of ordinary skill in the art at the time of the invention to have included

monitoring a usage level in order to correctly bill customers.

46.   Regarding claim 5, Schweitzer teaches providing data descriptive of said usage

level (col 2 lines 19-27).

47.   Regarding claim 6, Schweitzer teaches providing data descriptive of said usage

level is performed in real time (col 3 lines 65-67).

48.   Regarding claim 7, Schweitzer teaches using a graphical user interface to display said data descriptive of said usage level (col 4 lines 8-9 and 17-18).

49.   Regarding claim 8, Schweitzer teaches that said usage level comprises a present usage of said plurality of computing devices (col 4 lines 1-2).

50.   Regarding claim 9, Schweitzer teaches that said usage level comprises a historical usage of said plurality of computing devices (col 3 lines 43-49).

51.   Regarding claims 10-15, Schweitzer does not teach monitoring an allocation of the computer resources. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to monitor the allocation of resources for purposes of billing. Since allocation is equivalent to usage, claims 10-15 are rejected for the same reasons as claims 4-9.

52.   Regarding claims 16-21, Schweitzer does not teach monitoring an inventory of the computer resources. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to monitor the inventory of resources for purposes of billing. Since inventory is equivalent to allocation, claims 16-21 are rejected for the same reasons as claims 10-15.

53.   Regarding claim 29, Rajkumar, Buyya, Ahamed, and Tayyar do not teach billing
a user of said computing resources.

54.   Schweitzer describes a method for network accounting and billing (abstract and
col 1 lines 56-67 to col 2 lines 1-7). It would have been obvious to one of ordinary skill in
the art at the time of the invention to have included billing a user for using computer
resources in order to gain a profit.

55.   Regarding claim 30, Schweitzer teaches that billing comprises determining
whether a first price or a second price is to be billed (col 3 lines 24-25, "set the right
price").

56.   Regarding claim 31, Schweitzer does not explicitly teach that the first price
comprises a peak price.

57.   However it would have been obvious to one of ordinary skill in the art to include a
peak price to be charged during high utilization. One would be motivated by the desire
to ensure a higher return of profit when multiple users are vying for resources.

58.   Regarding claims 32-33, Schweitzer does not explicitly teach that said first price
comprises an off-peak price or that said second price comprises a peak price.

59.   However it would have been obvious to one of ordinary skill in the art to include a
peak price to be charged during high utilization and an off-peak price to be charged

during low utilization. One would be motivated by the desire to ensure a higher return of profit when multiple users are vying for resources.

60.   Regarding claim 34, Schweitzer does not explicitly teach that said first price is billed for said computing resources allocated in response to said reservation and said second price is billed for computing resources allocated in response to said request, wherein said first price is higher than said second price.

61.   However it would have been obvious to one of ordinary skill in the art to bill differently for a reservation and a request. Since reservations guarantee the allocation of a resource, one would be motivated by the desire to turn a higher profit by charging a higher premium.

62.   Regarding claim 37, Rajkumar, Buyya, Ahamed, Tayyar, and Schweitzer do not teach billing a user of said computing resources such that a cost varies in accordance with said priority indication.

63.   However it would have been obvious to one of ordinary skill in the art at the time of the invention to include doing so since a higher priority indication results in a higher guarantee of resource allocation. Thus, one would be motivated to turn a higher profit by charging a higher premium for such a guarantee.

64.   Regarding claims 48-53, they are the system claims of claims 6-7, 12-13, and 18-

19 above. Therefore, they are rejected for the same reasons as claims 6-7, 12-13, and

18-19.

65.   Regarding claim 54, Rajkumar, Buyya, Ahamed, and Tayyar do not explicitly

teach that said computing device is further configured to generate a billing record based

on a usage level of said plurality of computing resource.

66.   Schweitzer teaches generating a billing record based on a usage level of said

plurality of computing resource (col 3 lines 32-33). It would have been obvious to one of

ordinary skill in the art at the time of the invention to modify Rajkumar and Buyya to

include generating a billing record. One would be motivated by the desire to track

resource utilization and perform record keeping.

67.   Regarding claims 64-69, and 72, they are the system claims of claims 29-34, and

37 above. Therefore, they are rejected for the same reasons as claims 29-34, and 37.

Response to Arguments

68.   Applicant's arguments with respect to claims 2-22, 26-43, 46-56, 60-62, and 64-

79 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

69.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric C. Wai whose telephone number is 571-270-1012. The examiner can normally be reached on Mon-Thurs, 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng - Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/   /Eric C Wai/
Supervisory Patent Examiner, Art Unit 2195   Examiner, Art Unit 2195